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Montana Water Pollution Control Advisory Council  
c/o Bob Bukantis, Bureau Chief  
Monitoring & Data Management Bureau  
Department of Environmental Quality  
P.O. Box 200901  
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August 23, 2005

**RE: Comments Regarding Proposed Changes in Circular WQB-7 Resulting from Updated Criteria for Fish Consumption**

Dear Advisory Council Members,

ConocoPhillips Company understands the Montana DEQ has proposed revisions to update and correct Circular WQB-7, Montana's Numeric Water Quality Standards. These changes include proposed revisions related to human health criteria that incorporate fish consumption rates in their development. ConocoPhillips believes that the approach taken by MtDEQ to revise the Human Health Criteria development methodology is not appropriate and encourages the WPCAC to not support this portion of the proposed revisions.

Apparently, the MtDEQ has proposed these revisions in response to EPA's 2000 revision of the methodology for developing human health criteria. The revised methodology uses a freshwater fish consumption rate of 17.5 grams/day, which is increased from the previously used fish consumption rate of 6.5 grams/day. The attached technical memorandum, prepared by Brown and Caldwell for ConocoPhillips, provides some insight into why this fish new consumption rate may not be suitable for Montana's population and waters, and makes it clear that other options are available to MtDEQ in developing human health criteria.

Thank you for carefully considering these comments.

Sincerely,

Allen Eggen

Attachment: Brown and Caldwell: Review of Proposed Montana Human Health Criteria

**August 23, 2005**

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**To: Mr. Allen Eggen, ConocoPhillips**  
**From: Bret Linenfelser and Michelle Wind, Brown and Caldwell**  
**Subject: Review of Proposed Montana Human Health Criteria**  
Project No.: 1288275

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## **INTRODUCTION**

This Technical Memorandum provides Brown and Caldwell's review comments on the Montana Department of Environmental Quality (MDEQ) proposed changes to human health criteria based on changes to the Environmental Protection Agency (EPA) fish consumption rates.

## **REFERENCE DOCUMENTS**

Brown and Caldwell reviewed the following information to develop comments on the proposed changes to human health criteria.

1. April 2005 MDEQ Memorandum to parties interested in Montana Water Quality Standards (subject: Triennial review of WQB-7 the numeric water quality standards and sub-chapter 6 the surface water quality standards (17.30.601 et seq. ARM)).
2. MDEQ Circular WQB-7 with tracked changes dated October 2005.
3. EPA National Recommended Water Quality Criteria (NRWQC) Section 304(a), published in 2002 and based on revised methodologies for human health criteria developed in 2000.
4. December 31, 2003 Federal Register Notice, Volume 68, Number 250, which supports EPA's updated NRWQC criteria for 15 pollutants.

## **FINDINGS**

The MDEQ has proposed revisions to update and correct Circular WQB-7, Montana's Numeric Water Quality Standards. Brown and Caldwell's review focused on the proposed revisions related to human health criteria that incorporate fish consumption rates.

## **EPA Revised Human Health Criteria Methodology**

EPA revised the methodology for developing human health criteria in 2000. The revised methodology uses a freshwater fish consumption rate of 17.5 grams/day, which is increased from the previously used fish consumption rate of 6.5 grams/day. The national fish consumption rate is based on consumption of a broad range of freshwater fish and shellfish and may include consumption of commercial species, sport-caught fish and shellfish, or a combination of fish and shellfish from multiple sources. The term “sport fish” generally relates to fish caught by a sport fisher as opposed to purchased or caught commercially (OEHHA, 2001).

For water quality criteria based on consumption of water and fish (two exposure routes), water quality criteria become more stringent with higher fish consumption rates. This applies to criteria using cancer potency and using reference dose. For example, using a reference dose:

$$\text{NRWQC } (\mu\text{g/L}) = \frac{\text{Reference dose } \times \text{ Human body weight (70kg)}}{\text{Drinking water intake (2L/day)} \times \text{Fish consumption (17.5g/day)} \times \text{Bioconcentration factor}}$$

The change in fish consumption rate is based on an updated national default freshwater/estuarine fish consumption rate (17.5 grams/day). States have the discretion to adopt approaches on a case-by-case basis that differ from EPA guidance when appropriate. States and authorized Tribes are not required to adopt NRWQC, and they have four options when adopting water quality criteria:

1. Establish numerical values based on recommended section 304(a) criteria;
2. Adopt section 304(a) criteria modified to reflect site-specific conditions;
3. Adopt criteria derived using other scientifically defensible methods; or
4. Establish narrative criteria when numeric criteria cannot be determined (Federal Register Vol. 68, No. 250).

## **MDEQ Proposed Revisions to Numeric Water Quality Standards**

The proposed revisions to Montana’s Numeric Water Quality Standards include 70 changes to surface water human health standards based on the 2002 NRWQC. The increased fish consumption rate (17.5 grams/day) has a greater affect on pollutants with high bioconcentration factors (BCF). For example, the proposed standard for Acrolein (BCF=215 L/kg) decreases from 320 µg/L to 190 µg/L and the proposed standard for Acrylonitrile (BCF=30 L/kg) decreases from 0.59 to 0.51 µg/L.

It should be noted that some of the reductions in standards are below the required reporting value, which is the detection level that must be achieved in reporting surface water monitoring or compliance data unless otherwise specified by MDEQ (e.g., through a permit). The required reporting value is identified by the MDEQ as the best level of analysis that can be achieved by

laboratories. When the criteria are below the required reporting value, detected pollutants would automatically exceed the criteria. Although some pollutant criteria may be lower than the required reporting value, there is always the potential that the reporting value can be lowered in the future (e.g., as analytical methods develop). Reducing the reporting value increases the potential of exceeding criteria and associated effluent limits.

### **Fish Consumption Rates**

Fish consumption rates used to develop water quality criteria are not used to assess risk but to set limits to prevent the potential for excess risk developing. Therefore, consumption rates used to develop water quality criteria should be flexible so that criteria can be targeted to protect different populations. EPA's NRWQC aim to protect the majority of the general population from chronic adverse health effects. National consumption studies and high-end consumption rates from such studies of the entire general population (consumers and nonconsumers) are considered protective in this case (OEHHA, 2001). Average per capita rates derived from national surveys for consumption of fish and shellfish by the general population ranged from 10 to 17.9 grams per day (OEHHA, 2001).

Fish consumption studies have shown regional variation including differences for coastal areas compared with inland areas and accessibility to good commercial and noncommercial fisheries. In a fish consumption survey in Minnesota and North Dakota, states in close proximity to Montana, the median consumption rates were found to be 12.3 and 12.6 g/day for Minnesota and North Dakota, respectively. Median sport-caught fish consumption in Minnesota and North Dakota were 3.9 and 4.5 g/day, respectively. This survey found consumption rates lower than the national average (Benson, 2001). National fish consumption surveys have not often differentiated for commercial and sport fish and shellfish, but this is an important aspect in states that do not support commercial fishing. Fish consumption rates that include sport fish and shell fish may overestimate fish consumption without sport fish and shell fish. Regional studies of sport fishing populations have reported overall mean rates for consumption of sport fish ranging from 12.3 to 63.2 grams per day (OEHHA, 2001), but this includes coastal areas that would not be applicable in Montana.

### **General Considerations for Application of Revised Water Quality Criteria in Montana**

EPA provides options to states in adopting or developing water quality criteria. As described above, the NRWQC are based on national average data for fish consumption, and states can modify standards to reflect conditions specific to a state, a region, or a water body. Considerations for Montana water quality standards may include:

- Fish consumption on a national basis can differ by state region, or water body, based on types of fish consumed, access to fisheries (commercial and noncommercial), population, etc.
- From a regulatory perspective, the MDEQ has the ability to use fish consumption rates relative to the region, the state, or the waterbody.
- Permitted discharges are required to meet water quality standards, and standards are established to support site-specific or segment-specific beneficial uses. Standards based on national fish consumption rates may not be applicable to some Montana stream segments (e.g., local fish consumption rates may be lower than the national fish consumption rates). Receiving water beneficial uses should be considered in the application of human health standards and fish consumption rates.
- Angling is popular in Montana, but factoring the proportion of 'catch and release' may affect the connection between fishing and consumption rates. In addition, many waters in Montana may not be considered "prime" fishing waters, especially those in more urbanized areas which receive contributions of point and non-point source pollutants as regulated under the state and federal permitting process. These factors need to be taken into account when developing and applying human health criteria based on fish consumption.

### **Considerations for Permitted Dischargers**

The above considerations relate more generally to the adoption of NRWQC revisions by the MDEQ but are important to Permitted Dischargers as the modified human health criteria are likely to affect effluent discharge limits for specific constituents. In consideration of site-specific impacts, dischargers could determine which constituents are affected by the proposed criteria revisions by reviewing constituents currently regulated under their discharge permit. This assessment would focus on the degree of impact to currently regulated constituents, and evaluate other potentially (future) regulated constituents (e.g., process or operational constituents). This exercise is important to determine the potential magnitude of impact to a discharger. As shown in the proposed revisions to DEQ-7, the degree of change in human health criteria is not equal for all constituents affected. Another factor affecting the magnitude of a change in criteria is the BCF, which is different for each criterion. It is possible that the constituents of most concern to a discharger may have low BCFs, and the resulting change in criteria may be minimal.

Mr. Allen Eggen  
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#### **ADDITIONAL REFERENCES**

- Benson, S.A.; Crocker, C.R.; Erjavec, J.V.; Jensen, R.R.; Nyberg, C.M.; Wixø, C.Y.; Zola, J.M. Fish Consumption Survey: Minnesota and North Dakota; Final Report. Oct 30, 2001. U.S. Department of Energy Contract No. DE-FC26-98FT40321; EERC Publication 2001-EERC-10-01; Energy & Environmental Research Center: Grand Forks, ND, Oct 2001.
- OEHHA. 2001. *Chemicals in Fish: Consumption of Fish and Shellfish in California and the United States*. Final Report. Pesticide and Environmental Toxicology Section. Office of Environmental Health Hazard Assessment. California Environmental Protection Agency. Oakland, California.